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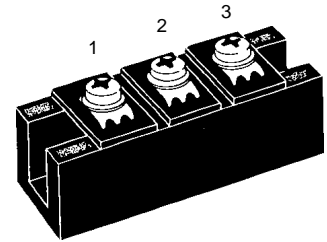
# Fast Recovery Epitaxial Diode (FRED) Module

**MEA 300-06 DA**  
**MEK 300-06 DA**  
**MEE 300-06 DA**

**V<sub>RRM</sub> = 600 V**  
**I<sub>FAVM</sub> = 304 A**  
**t<sub>rr</sub> = 250 ns**

Preliminary data

V <sub>RSM</sub> V	V <sub>RRM</sub> V	Type
600	600	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p><b>MEA 300-06DA</b></p> </div> <div style="text-align: center;"> <p><b>MEK 300-06DA</b></p> </div> <div style="text-align: center;"> <p><b>MEE 300-06DA</b></p> </div> </div>



Symbol	Test Conditions	Maximum Ratings	
I <sub>FRMS</sub>	T <sub>C</sub> = 75 °C	430	A
I <sub>FAVM</sub> ①	T <sub>C</sub> = 75 °C; rectangular, d = 0.5	304	A
I <sub>FRM</sub>	t <sub>p</sub> < 10 μs; rep. rating, pulse width limited by T <sub>VJM</sub>	1640	A
I <sub>FSM</sub>	T <sub>VJ</sub> = 45°C; t = 10 ms (50 Hz), sine	2400	A
	t = 8.3 ms (60 Hz), sine	2640	A
	T <sub>VJ</sub> = 150°C; t = 10 ms (50 Hz), sine	2160	A
	t = 8.3 ms (60 Hz), sine	2380	A
I <sup>2</sup> t	T <sub>VJ</sub> = 45°C; t = 10 ms (50 Hz), sine	28800	A <sup>2</sup> s
	t = 8.3 ms (60 Hz), sine	29300	A <sup>2</sup> s
	T <sub>VJ</sub> = 150°C; t = 10 ms (50 Hz), sine	23300	A <sup>2</sup> s
	t = 8.3 ms (60 Hz), sine	23800	A <sup>2</sup> s
T <sub>VJ</sub>		-40...+150	°C
T <sub>stg</sub>		-40...+125	°C
T <sub>Smax</sub>		110	°C
P <sub>tot</sub>	T <sub>C</sub> = 25°C	875	W
V <sub>ISOL</sub>	50/60 Hz, RMS t = 1 min	3000	V~
	I <sub>ISOL</sub> ≤ 1 mA t = 1 s	3600	V~
M <sub>d</sub>	Mounting torque (M6)	2.25-2.75/20-25	Nm/lb.in.
	Terminal connection torque (M6)	4.50-5.50/40-48	Nm/lb.in.
d <sub>s</sub>	Creeping distance on surface	12.7	mm
d <sub>A</sub>	Strike distance through air	9.6	mm
a	Maximum allowable acceleration	50	m/s <sup>2</sup>
Weight		150	g

## Features

- International standard package with DCB ceramic base plate
- Planar passivated chips
- Short recovery time
- Low switching losses
- Soft recovery behaviour
- Isolation voltage 3600 V~
- UL registered E 72873

## Applications

- Antiparallel diode for high frequency switching devices
- Free wheeling diode in converters and motor control circuits
- Inductive heating and melting
- Uninterruptible power supplies (UPS)
- Ultrasonic cleaners and welders

## Advantages

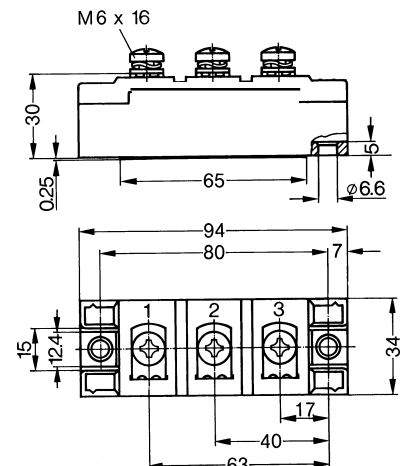
- High reliability circuit operation
- Low voltage peaks for reduced protection circuits
- Low noise switching
- Low losses

Symbol	Test Conditions	Characteristic Values (per diode)			
		typ.	max.		
I <sub>R</sub>	T <sub>VJ</sub> = 25°C V <sub>R</sub> = V <sub>RRM</sub>	12	mA		
	T <sub>VJ</sub> = 25°C V <sub>R</sub> = 0.8 • V <sub>RRM</sub>	3	mA		
	T <sub>VJ</sub> = 125°C V <sub>R</sub> = 0.8 • V <sub>RRM</sub>	80	mA		
V <sub>F</sub>	I <sub>F</sub> = 150 A; T <sub>VJ</sub> = 125°C	1.05	V		
	T <sub>VJ</sub> = 25°C	1.27	V		
	I <sub>F</sub> = 260 A; T <sub>VJ</sub> = 125°C	1.19	V		
	T <sub>VJ</sub> = 25°C	1.36	V		
V <sub>T0</sub>	For power-loss calculations only	0.85	V		
r <sub>T</sub>		1.34	mΩ		
R <sub>thJH</sub>	DC current	0.228	K/W		
R <sub>thJC</sub>	DC current	0.143	K/W		
t <sub>rr</sub>	I <sub>F</sub> = 300 A V <sub>R</sub> = 300 V -di/dt = 400 A/μs	250	T <sub>VJ</sub> = 100°C	300	ns
			T <sub>VJ</sub> = 25°C	44	A
			T <sub>VJ</sub> = 100°C	66	A

① I<sub>FAVM</sub> rating includes reverse blocking losses at T<sub>VJM</sub>, V<sub>R</sub> = 0.6 V<sub>RRM</sub>, duty cycle d = 0.5  
 Data according to IEC 60747

IXYS reserves the right to change limits, test conditions and dimensions

## Dimensions in mm (1 mm = 0.0394")



**IXYS** **MEA 300-06 DA MEE 300-06 DA MEK 300-06 DA**

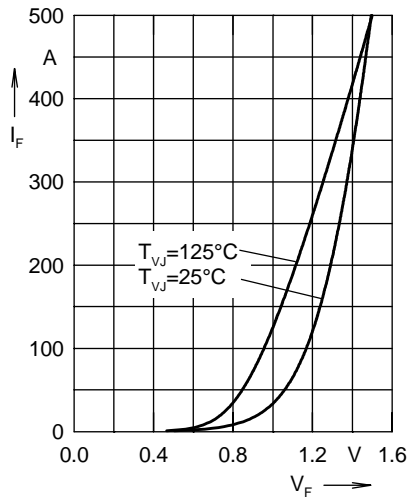


Fig. 1 Forward current  $I_F$  versus max. voltage drop  $V_F$  per leg

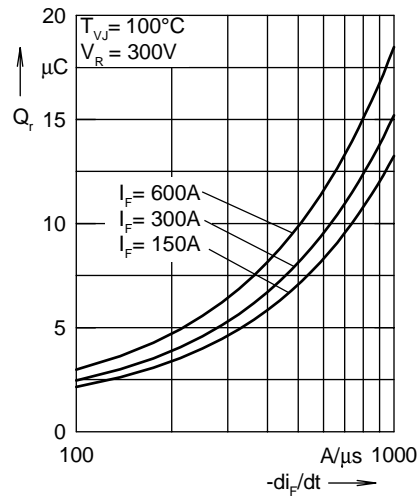


Fig. 2 Typ. reverse recovery charge  $Q_r$  versus  $-di_F/dt$

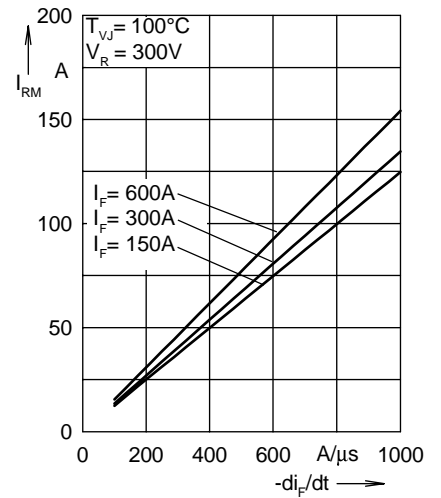


Fig. 3 Typ. peak reverse current  $I_{RM}$  versus  $-di_F/dt$

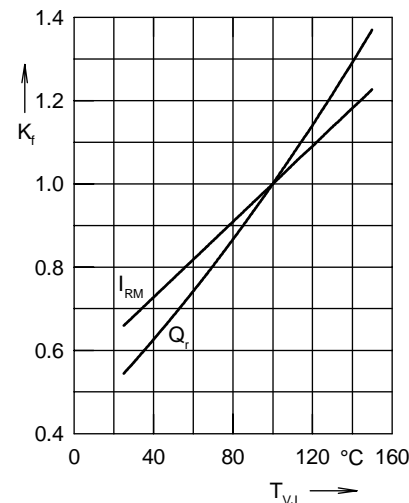


Fig. 4 Dynamic parameters  $Q_r$ ,  $I_{RM}$  versus junction temperature  $T_{VJ}$

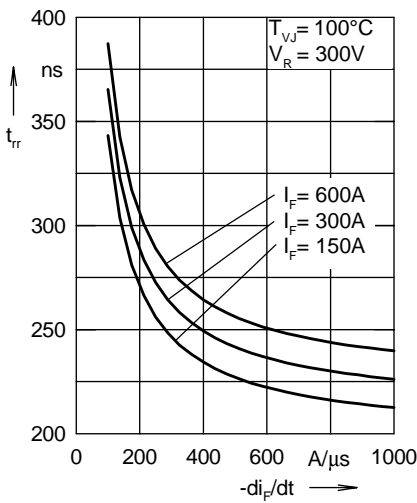


Fig. 5 Typ. recovery time  $t_{tr}$  versus  $-di_F/dt$

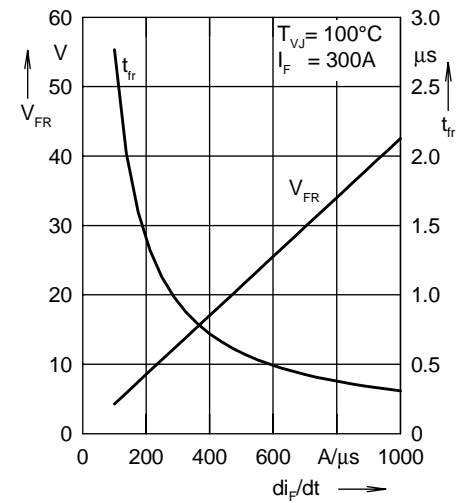


Fig. 6 Typ. peak forward voltage  $V_{FR}$  and  $t_{tr}$  versus  $di_F/dt$

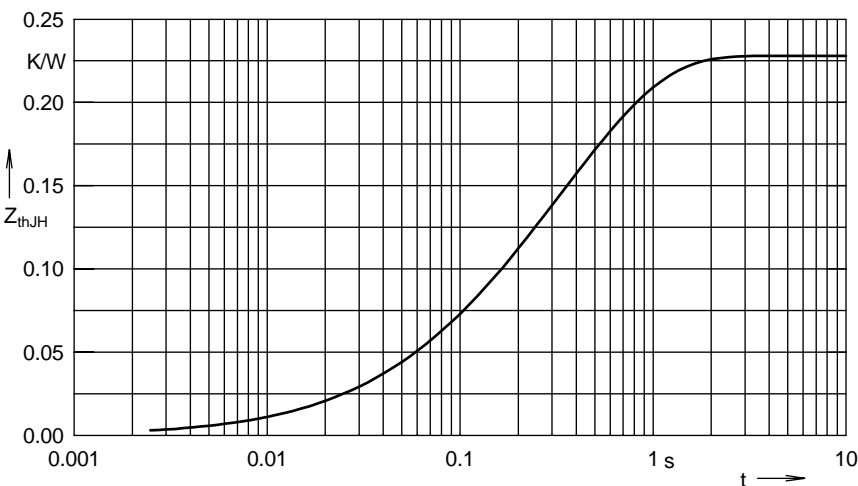


Fig. 7 Transient thermal impedance junction to heatsink

Constants for  $Z_{thjS}$  calculation:

i	$R_{thi}$ (K/W)	$t_i$ (s)
1	0.002	0.08
2	0.008	0.024
3	0.054	0.112
4	0.164	0.464